

CLAIMS

1. A liquid container comprising
a cup including a brim, a floor, and a side wall extending from the brim
5 toward the floor, the side wall including a radially inwardly facing first annular seal surface, the brim including a radially inwardly facing second annular seal surface, an axially upwardly facing third annular seal surface, and a radially outwardly facing fourth annular seal surface, and
a lid including a closure and a closure mount ring appended to the
10 closure and coupled to the brim to retain the closure in a position closing a mouth opening into a liquid reservoir chamber formed in the cup, the closure mount ring including a first seal ring arranged to engage the radially inwardly facing first annular seal surface to establish a first liquid flow barrier therebetween, a second seal ring arranged to engage the radially inwardly facing second annular seal surface to
15 establish a second liquid flow barrier therebetween, a third seal ring arranged to engage the axially upwardly facing third annular seal surface to establish a third liquid flow barrier therebetween, and a fourth seal ring arranged to engage the radially outwardly facing fourth annular seal surface to establish a fourth liquid flow barrier therebetween.
- 20 2. The liquid container of claim 1, wherein the brim includes an inner annular strip located above the side wall of the cup and a frustoconical lid retainer arranged to interconnect the inner annular strip and the side wall of the cup and to converge toward a reference point located in spaced-apart relation to the floor to position the frustoconical lid retainer therebetween to provide an undercut under
25 the inner annular strip and the closure mount ring includes a first lid-removal blocker wall located between the first and second seal ring and arranged to engage the frustoconical lid retainer during movement of the lid in an outer direction away from the floor of the cup to block removal of the lid from the cup.
- 30 3. The liquid container of claim 2, wherein the first lid-removal blocker wall has a frustoconical shape.
4. The liquid container of claim 2, wherein the first lid-removal blocker wall interconnects the first and second seal rings.

5. The liquid container of claim 4, wherein the first seal ring has a first diameter and the second seal ring has a second diameter that is lesser than the first diameter.

6. The liquid container of claim 2, wherein the closure mount ring further includes a lid-removal flange located below the fourth seal ring and arranged to extend downwardly in an inner direction opposite to the outer direction.

7. The liquid container of claim 6, wherein the closure mount ring further includes a second lid-removal blocker wall located between the fourth seal ring and the lid-removal flange and arranged to engage a terminal end of the brim during movement of the lid in the outer direction to block removal of the lid from the cup.

8. The liquid container of claim 6, wherein the lid-removal flange includes, in series, first, second, third, and fourth annular segments, the first annular segment is arranged to surround the first seal ring, and the third and fourth annular segments have frustoconical shapes.

9. The liquid container of claim 1, wherein the first seal ring has a first diameter and the second seal ring has a second diameter that is lesser than the first diameter.

10. The liquid container of claim 9, wherein the closure mount ring further includes a frustoconical wall interconnecting the first and second seal rings.

11. The liquid container of claim 9, wherein the fourth seal ring is aligned in concentric relation with the second seal ring and has a third diameter that is greater than the first and second diameters.

12. The liquid container of claim 11, wherein each of the second and fourth seal rings is oriented to extend in a generally vertical direction and the third seal ring is oriented to extend in a generally horizontal direction.

13. The liquid container of claim 12, wherein the closure mount ring further includes an annular quarter round-shaped inner rim interconnecting the second and third seal rings.

30 14. The liquid container of claim 12, wherein the closure mount ring further includes an annular quarter round-shaped outer rim interconnecting the third and fourth seal rings.

15. The liquid container of claim 1, the closure mount ring includes a first annular segment arranged to surround the first seal ring to define an annular channel therebetween, the second, third, and fourth seal rings cooperate to define an annular chamber communicating with the annular channel and receiving the brim
5 therein, and an upper portion of the side wall of the cup extends through the annular channel when the brim is located in the annular chamber.

16. The liquid container of claim 15, wherein the radially inwardly facing first annular seal surface is located in the first annular channel.

17. The liquid container of claim 15, wherein the first seal ring has
10 a first diameter and the second seal ring has a second diameter that is lesser than the first diameter.

18. The liquid container of claim 15, wherein the brim includes an inner annular strip located above the side wall of the cup and a frustoconical lid retainer arranged to interconnect the inner annular strip and the side wall of the cup
15 and to converge toward a reference point located in spaced-apart relation to the floor to position the frustoconical lid retainer therebetween to provide an undercut under the inner annular strip and the closure mount ring includes a first lid-removal blocker wall located between the first and second seal ring and arranged to engage the frustoconical lid retainer during movement of the lid in an outer direction away from
20 the floor of the cup to block removal of the lid from the cup.

19. The liquid container of claim 1, wherein the closure includes a hub formed to include a straw receiver, radially extending spoke ribs having an outer end terminating at the closure mount ring and an inner end terminating at the hub, and an inclined plate extending between each pair of adjacent radially extending spoke
25 ribs and between the closure mount ring and the hub.

20. The liquid container of claim 1, wherein a first of the inclined plates has a first slope with respect to a horizontal reference plane before the closure mount ring of the lid is mounted on the brim of the cup and a steeper second slope with respect to the horizontal reference plane upon coupling of the closure mount ring
30 on the brim.

21. A liquid container comprising
a cup including a brim, a floor, and a side wall extending from the brim
toward the floor, the side wall including a radially inwardly facing first annular seal
surface, the brim including a radially inwardly facing second annular seal surface and
5 a radially inwardly projecting, axially outwardly extending lid retainer located above
the first annular seal surface and below the second annular seal surface,
a lid including a closure and a closure mount ring appended to the
closure and coupled to the brim to retain the closure in a position closing a mouth
opening into a liquid reservoir chamber formed in the cup, the closure mount ring
10 including a first seal ring arranged to engage the radially inwardly facing first annular
seal surface to establish a first liquid flow barrier therebetween, a second seal ring
arranged to engage the radially inwardly facing second annular seal surface to
establish a second liquid flow barrier therebetween, and a first lid-removal blocker
wall located between the first and second seal ring and arranged to engage the lid
15 retainer during movement of the lid in an outer direction away from the floor of the
cup to block removal of the lid from the cup.

22. The liquid container of claim 21, wherein the brim includes an
inner annular strip located above the side wall of the cup and configured to include
the radially inwardly facing second annular seal surface, the lid retainer has a
20 frustoconical shape and is arranged to interconnect the inner annular strip and the side
wall of the cup and to converge toward a reference point located in spaced-apart
relation to the floor to position the lid retainer therebetween to provide an undercut
under the inner annular strip.

23. The liquid container of claim 22, wherein the first lid-removal
25 blocker wall has a frustoconical shape.

24. The liquid container of claim 21, wherein the first lid-removal
blocker wall interconnects the first and second seal rings.

25. The liquid container of claim 24, wherein the first seal ring has
a first diameter and the second seal ring has a second diameter that is lesser than the
30 first diameter.

26. The liquid container of claim 21, wherein the first seal ring has a first diameter and the second seal ring has a second diameter that is lesser than the first diameter.

27. A liquid container comprising

5 a cup including a brim, a floor, and a side wall extending from the brim toward the floor, the side wall including a first annular seal surface, the brim including a second annular seal surface, a third annular seal surface, and a fourth annular seal surface, each of the first, second, and fourth annular seal surfaces extending in a generally vertical direction, and the third annular seal surface
10 extending in a generally horizontal direction, and

a lid including a closure and a closure mount appended to the closure and coupled to the brim to retain the closure in a position closing a mouth opening into a liquid reservoir chamber formed in the cup, the closure mount including a first seal ring arranged to engage the first annular seal surface to establish a first liquid
15 flow barrier therebetween, a second seal ring arranged to engage the second annular seal surface to establish a second liquid flow barrier therebetween, a third seal ring arranged to engage the third annular seal surface to establish a third liquid flow barrier therebetween, and a fourth seal ring arranged to engage the fourth annular seal surface to establish a fourth liquid flow barrier therebetween.

20 28. The liquid container of claim 27, wherein the closure mount further includes a first lid-removal blocker wall arranged to interconnect the first and second seal rings and to engage an undercut formed in the cup during movement of the lid in an outer direction away from the floor of the cup to block removal of the lid from the cup.

25 29. The liquid container of claim 28, wherein the first seal ring has a first diameter and the second seal ring has a second diameter that is lesser than the first diameter.

30 30. The liquid container of claim 28, wherein the lid-removal flange includes, in series, first, second, third, and fourth annular segments, the first annular segment is arranged to surround the first seal ring, and the third and fourth annular segments have frustoconical shapes, and wherein the first seal ring has a first

diameter and the second seal ring has a second diameter that is lesser than the first diameter.

31. The liquid container of claim 27, wherein the closure mount further includes a lid-removal flange located below the fourth seal ring.

5 32. The liquid container of claim 31, wherein the closure mount further includes a second lid-removal blocker wall located between the fourth seal ring and the lid-removal flange and arranged to engage a terminal end of the brim during movement of the lid in an outer direction away from the floor of the cup to block removal of the lid from the cup.

10 33. The liquid container of claim 31, wherein the lid-removal flange includes, in series, first, second, third, and fourth annular segments, the first annular segment is arranged to surround the first seal ring, and the third and fourth annular segments have frustoconical shapes.

15 34. The liquid container of claim 27, wherein the first seal ring has a first diameter and the second seal ring has a second diameter that is lesser than the first diameter.

35. The liquid container of claim 34, wherein the closure mount further includes a frustoconical wall interconnecting the first and second seal rings.

20 36. The liquid container of claim 34, wherein the fourth seal ring is aligned in concentric relation with the second seal ring and has a third diameter that is greater than the first and second diameters.

37. The liquid container of claim 27, wherein the closure mount further includes an annular quarter round-shaped inner rim interconnecting the second and third seal rings.

25 38. The liquid container of claim 27, wherein the closure mount further includes an annular quarter round-shaped outer rim interconnecting the third and fourth seal rings.

30 39. The liquid container of claim 27, wherein the closure mount includes a first annular segment arranged to surround the first seal ring to define an annular channel therebetween, the second, third, and fourth seal rings cooperate to define an annular chamber communicating with the annular channel and receiving the

brim therein, and an upper portion of the side wall of the cup extends through the annular channel when the brim is located in the annular chamber.

40. The liquid container of claim 38, wherein the first annular seal surface is located in the first annular channel.